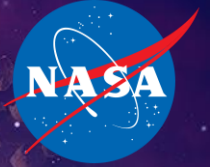


National Aeronautics and  
Space Administration



# EXPLORE SCIENCE

**Astrophysics Advisory Committee**

**Science Activation Status**

**Kristen Erickson**

June 23, 2020

*Sharing the Science*  
<http://science.nasa.gov/learners>





## Exploration and Scientific Discovery

Seeking to discover the secrets of the universe, search for life, and protect and improve life on Earth. We utilize a balanced portfolio approach that is informed by Decadal Surveys and is responsive to Administration priorities and direction from Congress to make progress and enhance opportunities for cross-disciplinary science.



## Innovation

Fostering a culture that recognizes innovation and measured risk-taking as the cornerstones of a forward-looking program of scientific discovery. We encourage innovation, entrepreneurship, and collaboration in pursuit of common goals and to capitalize on the rapid evolution of commercial capabilities.



## Interconnectivity and Partnerships

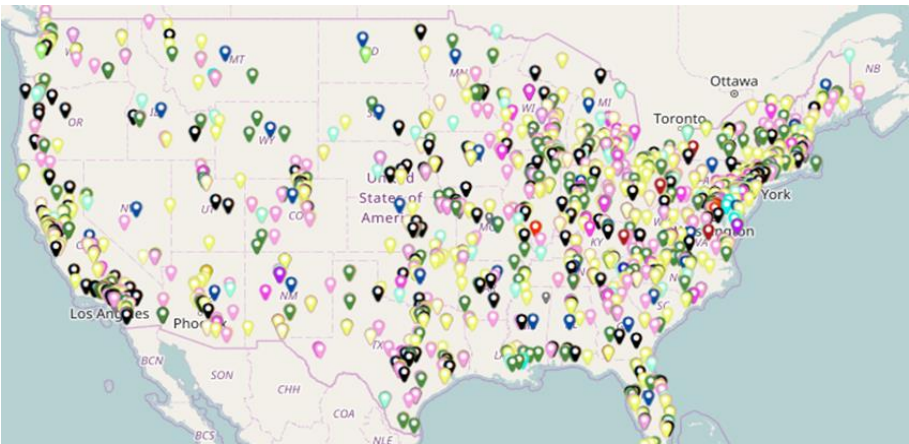
Forming strategic partnerships that leverage each contributor's strengths to yield advances for mutual benefit. We recognize and support the important role NASA Centers, Federal agencies, private industry, academia, non-profits, community-based organizations, and international partners play in helping make our scientific vision a reality.



## Inspiration

Building opportunities to encourage as wide an audience as possible to engage in our work. We seek to reduce barriers to entry, in order to allow people of all ages and backgrounds to join us for the benefit of the entire scientific and engineering community, as well as the world.

# Science Activation Overview



Science Activation

- **Strategic Objective**
- Enable NASA science experts and content to engage more effectively and efficiently with learners of all ages
- **Major Activities**
- Created in 2016, emphasizes diversity and inclusiveness and provide opportunities for minorities, students with disabilities, students at minority universities, and other underserved groups
- Leverage over 220 partnerships through network of science and community-based institutions using “multiplier effect” across U.S.
- Validate performance on each award using independent evaluators
- Utilize volunteer networks, such as Solar System Ambassadors and Night Sky Network, with over 1100 mobilized across U.S.
- National Academies assessed Program in 2019
- Effort is for five years and one five-year extension.

CY (2020)	BY (2021)	BY + 1 (2022)	BY + 2 (2023)	BY + 3 (2024)	BY + 4 (2025)
\$45,600	\$45,600	\$45,600	\$45,600	\$45,600	\$45,600

# Major Recent Accomplishments FY19 - 20

- Over 4600 libraries registered for 2019 Universe of Stories summer programming
- Use of Earth Science GLOBE Observer app to increase educator and student participation in collaborative, real world research e.g., Clouds, Trees, Land, Mosquitoes. >140,000 GLOBE Observers reporting at least 265k observations since the app launched!
- Developed 172 digital instructional resources to be distributed free on PBS LearningMedia to over 1.9M educators
- Developed and distributed 350 toolkits to science centers and museums reaching 4,535 event volunteers and 324,140 members of public; 56% reported partnering with at least one additional institution to share resources. Estimated reach >2 million year
- Developed and distributed 52 hands-on exhibits to curated organizations
- 89 state and public libraries competitively selected to receive science content tailored to local communities
- Launched virtual platform to provide science content to over 500 informal educational institutions
- Student challenges pivoted to virtual and provided tremendous creative opportunities
- Four PI virtual planning sessions held with NASEM experts
- Citizen Science:
  - SMaC approval for Roadmap and amateur workshops
  - ROSES announcement for new opportunities
  - 2<sup>nd</sup> Workshop to build SMD community – now virtual (Summer 2020). Almost 200 registered participants



# Planned Accomplishments FY20 - 21

- NASEM recommendations incorporated into next phase of program (SciAct 2.0)
- SciAct 2.0 decisions by end of FY 2020
  - Extensions (not all 23 will be extended)
  - Solicitation issued and proposals received May 2020 to fill gaps in Subject Matter Expert integration and broadening participation \$5M/year
  - Re-baseline completed by March 2021
- Increase utilization of Science Activation Hotline for external requests and to increase SME connections
- New Leads from PSD, ESD and HSD to be assigned to strengthen ties with science community
- Learning activities executed in all 50 states by 2020 (GPRMMA metric)
- Continue to advance national education goals, including updated 5-year federal Co-STEM strategic implementation plan

# Alignment Between SciAct and 2018 Federal Co-STEM

## Goals for American STEM Education:

- Build Strong Foundations for STEM Literacy
- Increase Diversity, Equity, and Inclusion in STEM
- Prepare the STEM Workforce for the Future

<b><u>Pathways</u></b>	<b><u>Objectives</u></b>	<b><u>NASA</u></b>
Develop & Enrich Strategic Partnerships	Foster STEM ecosystems that unite communities	SciAct
	Increase Work-Based Learning through Educator-Employer Partnerships	
	Blend Successful Practices from Across the Learning Landscape	SciAct
Engage Students Where Disciplines Converge	Advance Innovation and Entrepreneurship Education	
	Make Mathematics a Magnet	
	Encourage Transdisciplinary Learning	SciAct
Build Computational Literacy	Promote Digital Literacy and Cyber Safety	
	Make Computational Thinking an Integral Element of All Education	
	Expand Digital Platforms for Teaching and Learning	SciAct
Operate with Transparency & Accountability		SciAct



# Highlights







# Highlight Placeholder



# NASA ASTRO CAMP® Community Partners Program (ACCP)

## Monthly Status – FY 20 May Summary



*We Go...Moon, Mars & Beyond  
with  
NASA Science!!*

NASA 2020

ASTRO CAMP®

Community Partners Program





# NASA ASTRO CAMP® Community Partners Program (ACCP) Monthly Status – FY 20 May ACCP Community Site Locations 5.25.20



ASTRO CAMP Community Partners Program - 81 ACCP Sites with Multiple Programs TBD

19-LA; 25-MS; 12-AL; 1-CA; 1-FL; 4-CT; 1-TN; 10-TX; 1-MA; 2-GA, 1-ND, 1-AK, 1-NJ, 1-WI 1-El Salvador



## FY 20 ACCP Summary:

### 81 Community Collaborations

- 50 Youth Service Organizations
- 12 K-12 Schools & Districts
- 9 Colleges & Universities
- 8 Museums
- 2 Library Sites

ACCP – Facilitator's EPD Patch, MS Children's Museum, Jackson, MS going virtual for 2020!



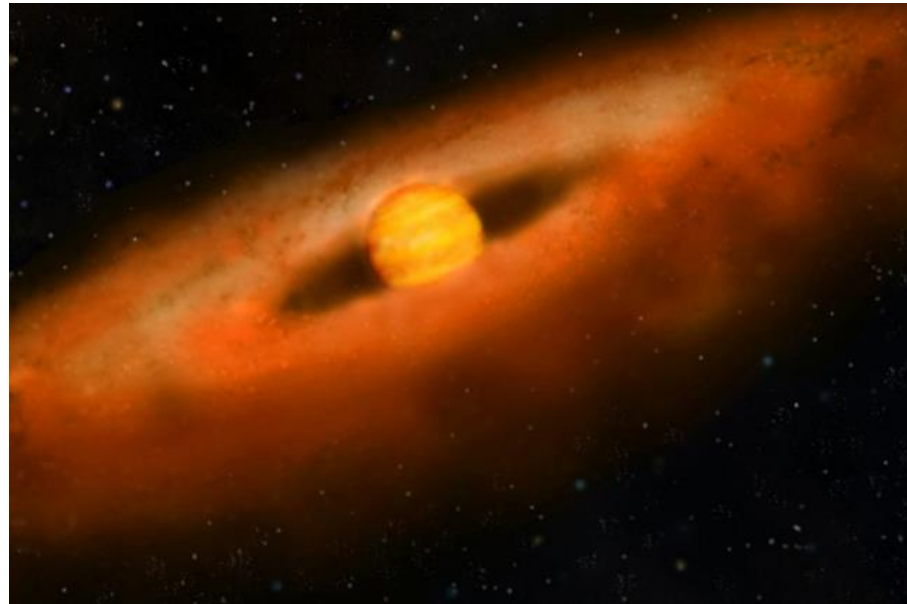


# Citizen Science



Dr. Marc Kuchner  
SMD Citizen Science Officer

# Implementing the Citizen Science Initiative



- Citizen Science Initiative (\$1M / year starting FY2020) awarding agreements to develop and share best practices within SMD and beyond. Three co-funded awards across SMD
- Leverage successes, like Aurorasaurus, Backyard Worlds: Planet 9, Stardust@Home, Disk Detective and eight other SMD projects that have helped citizen scientists become co-authors on scientific papers
- Initiative ensures open source platforms, common protocols, transparency of data and reporting, and strong linkages are made to NASA science. Training sessions with professional scientists, practitioners, and amateurs held each year
- Supports the development of citizen science infrastructure for web and mobile platforms to make citizen science approaches accessible to a wider range of professional scientists
- New agency policy in process, led by Office of Chief Scientist
- Approach consistent with 2017 American Innovation and Competitiveness Act, but adds the rigor of professional science



Back-Up





## VISION

To lead a globally interconnected program of scientific discovery that encourages innovation, positively impacts people's lives, and is a source of inspiration

## MISSION

Discover the secrets of the universe. Search for life elsewhere.  
Protect and improve life on Earth

### PRIORITY 1: Exploration and Scientific Discovery

**STRATEGY 1.1:** Execute a balanced science program based on discipline-specific guidance from NASEM, Administration priorities, and direction from Congress

**STRATEGY 1.2:** Participate as a key partner in the agency's exploration initiative, focusing on scientific research of and from the Moon, lunar orbit, Mars, and beyond.

**STRATEGY 1.3:** Advance discovery in emerging fields by identifying and exploiting cross-disciplinary opportunities between traditional science disciplines

**STRATEGY 1.4:** Develop a Directorate-wide, target-user focused approach to applied programs, including Earth Science Applications, Space Weather, Planetary Defense, and Space Situational Awareness

### PRIORITY 2: Innovation

**STRATEGY 2.1:** Foster a culture that encourages innovation and entrepreneurship across all elements of the SMD portfolio.

**STRATEGY 2.2:** Foster a culture that encourages collaboration in pursuit of common goals.

**STRATEGY 2.3:** Enhance our focus on high intellectual risk/high impact research investments.

**STRATEGY 2.4:** Drive innovation in focused technology areas to capitalize on the rapid evolution of commercial capabilities

### PRIORITY 3: Interconnectivity and Partnerships

**STRATEGY 3.1:** Actively engage with the NASA Centers to make more informed strategic decisions that further NASA's scientific goals and are aligned with each Center's unique capabilities.

**STRATEGY 3.2:** Actively seek collaborations with international partners based on their unique capabilities and mutual scientific goals.

**STRATEGY 3.3:** Actively engage with other federal agencies to make more informed decisions, cooperate in scientific research, and pursue partnerships that further national interests.

**STRATEGY 3.4:** Provide increasing opportunities for research institutions, including academia and non-profits, to contribute to SMD's mission.

**STRATEGY 3.5:** Pursue public-private partnerships in support of shared interests with industry.

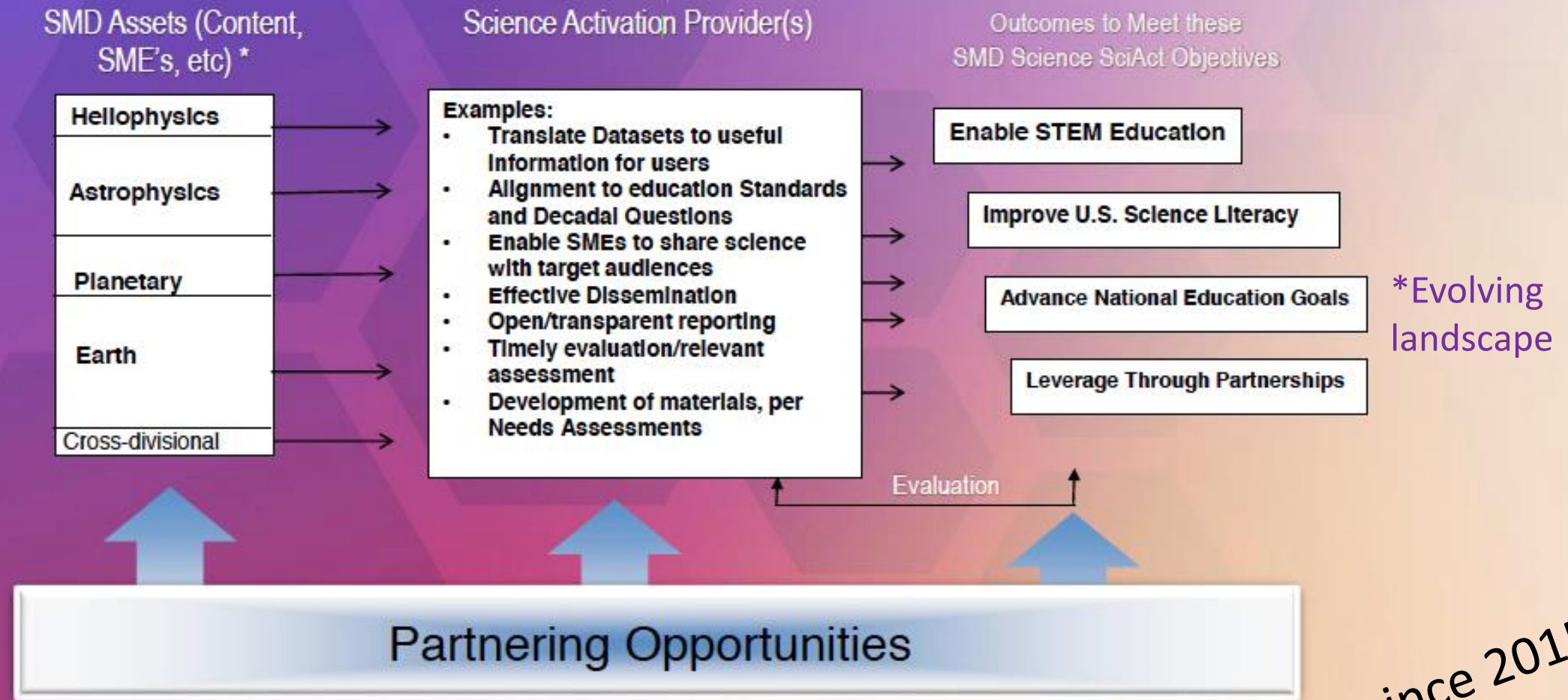
### PRIORITY 4: Inspiration

**STRATEGY 4.1:** Increase the diversity of thought and backgrounds represented across the entire SMD portfolio through a more inclusive environment.

**STRATEGY 4.2:** Purposefully and actively engage with audiences and learners of all ages to share the story of NASA's integrated science program.



# SMD Science Activation Model



\* Divisions responsible for science content datasets), SME selection, and enabling flight opportunities

# Astrophysics



SETI Institute - Mountain View, CA. Pamela Harman, Principal Investigator for “Reaching for the Stars: NASA Science for Girl Scouts”

SETI Institute –Mountain View, CA. Dana Backman, Principal Investigator for “Airborne Astronomy Ambassadors (AAA)”

Space Telescope Science Institute - Baltimore, MD. Denise Smith, Principal Investigator for “NASA's Universe of Learning: An Integrated Astrophysics STEM Learning and Literacy Program”

## Earth Science

Gulf of Maine Research Institute- Portland, ME. Leigh Peake, Principal Investigator for “Real World, Real Science: Using NASA Data to Explore Weather and Climate”

Institute for Global Environmental Strategies –Arlington, VA. Theresa Schwerin, Principal Investigator for “NASA Earth Science Education Collaborative”

University of Alaska, Fairbanks –Fairbanks, AK. Elena Sparrow, Principal Investigator for “Impacts and Feedbacks of a Warming Arctic: Engaging Learners in STEM using NASA and GLOBE Assets”

University of Texas, Austin –Austin, TX. Margaret Baguio, Principal Investigator for “STEM Enhancement in Earth Science”

University of Toledo –Toledo, OH. Kevin Czajkowski, Principal Investigator for “Mission Earth: Fusing GLOBE with NASA Assets to Build Systemic Innovation in STEM Education”

Wayne County Intermediate School District –Wayne, MI. Andy Henry, Principal Investigator for “AEROKATS and ROVER Education Network (AREN)”



# Planetary Science



Arizona State University –Tempe, AZ. Ariel Anbar, Principal Investigator for “NASA SMD Exploration Connection”

Challenger Center for Space Science Education--Washington, DC Denise Kopecky, Principal Investigator for “CodeRed: My STEM Mission”

Northern Arizona University—Flagstaff, AZ. Joelle Clark, Principal Investigator for “PLANETS (Planetary Learning that Advances the Nexus of Engineering, Technology, and Science)”

# Heliophysics

Exploratorium – San Francisco, CA. Robert Semper, Principal Investigator for “Navigating the Path of Totality”

NASA Goddard Space Flight Center - Greenbelt, MD. C. Alex Young, Principal Investigator for “Heliophysics Education Consortium: Through the Eyes of NASA to the Hearts and Minds of the Nation”

## SMD Science Activation Awardees: Cross- Discipline



Southwestern Community College –Sylva, NC. Matt Cass, Principal Investigator for “Smoky Mountains STEM Collaborative: Bridging the Gaps in the K-12 to Post-Secondary Education Pathway”

Space Science Institute – Boulder, CA. Paul Dusenbery, Principal Investigator for “NASA@ My Library: A National Earth and Space Science Initiative that Connects NASA, Public Libraries and their Communities”

University Of Washington, Seattle –Seattle, WA. Robert Winglee, Principal Investigator for “Northwest Earth and Space Sciences Pipeline (NESSP)”

Arizona State University– Saint Paul, MN. Paul Martin, Principal Investigator for “NASA Space and Earth Informal Science Education Network (SEISE-Net)”

University of Michigan, Ann Arbor –Ann Arbor, MI. Jon Miller, Principal Investigator for “Demonstration of the Feasibility of Improving Scientific Literacy and Lifelong Learning through a Just-in-Time Dissemination Process”

University Of Colorado, Boulder – Boulder, CO. Douglas Duncan, Principal Investigator for “Enhancement of Astronomy and Earth Science Teaching Using High Resolution Immersive Environments”

WGBH Educational Foundation – Boston, MA. Pegeen Wright, Principal Investigator for “NASA and WGBH: Bringing the Universe to America's Classrooms”

American Museum of Natural History - New York City, NY. Rosamond Kinzler, Principal Investigator for “OpenSpace: An Engine for Dynamic Visualization of Earth and Space Science for Informal Education and Beyond”

National Institute of Aerospace Associates – Hampton, VA. Shelley Spears, Principal Investigator for “NASA eClips 4D Multi-Dimensional Strategies to Promote Understanding of NASA Science: Design, Develop, Disseminate and Discover”



# EXPLORE

with us

